

CLAIMS

1. A polymer mixture containing at least one synthetic first polymer P(i) and at least one second polymer P(j) and optionally a swelling agent for P(i) and/or P(j), characterised in that the polymer P(i) has a degree of polymerisation $DP(P(i)) > 500$ and at least one type of crystallisable sequences A having a degree of polymerisation $DPs(P(i))$ of these sequences > 20 and the polymer P(j) is made up of the same monomer units as the sequences A of P(i) and the degree of polymerisation $DP(P(j))$ of P(j) is $20 < DP(P(j)) < 500$ and the polymer mixture comprising a molecularly dispersed mixture containing P(i) and P(j) forms a network under heterocrystallisation.
2. The polymer mixture according to claim 1, characterised in that under comparable processing conditions of P(i) and of P(i) + P(j)
 - a) the quotient of the modulus of elasticity $E(i, j)$ of P(i) + P(j) and the modulus of elasticity $E(i)$ of P(i), $E(i, j)/E(i)$ is >1.1 , preferably >1.3 , more preferably >1.5 , most preferably >2.0 and in each case <4 ; and/or
 - b) the quotient of the yield stress $sy(i, j)$ of P(i) + P(j) and the yield stress $sy(i)$ of P(i), $sy(i, j)/sy(i)$ is >1.1 , preferably >1.2 , more preferably >1.3 , most preferably >1.5 and in each case <3.0 ; and optionally
 - c) if there is a fraction A(j) of P(j) relative to P(i) + P(i) in wt.% within the range $1 < A(j) < 15$, the quotient of the breaking elongation $eb(i, j)$ of P(i) + P(j) and the breaking elongation $eb(i)$ of P(i), $eb(i, j)/eb(i)$ is >1.01 , preferably >1.03 , more preferably >1.05 , most preferably >1.10 and in each case <1.5 .
3. The polymer mixture according to claim 1 or claim 2, characterised in that the quotient of the MFI(i, j) of the mixture of P(i) + P(j) and the MFI(i) of P(i), $MFI(i, j)/MFI(i)$ is >1.2 , preferably >1.5 , more preferably >2.0 , most preferably >3 and in each case <500 .

4. The polymer mixture according to any one of the preceding claims, characterised in that under comparable processing conditions of P(i) and of P(i) + P(j), the quotient of the crystallinity K(i, j) of P(i) + P(j) and the crystallinity K(i) of P(i), $K(i, j)/K(i)$ is >1.03 , preferably >1.05 , more preferably >1.1 , most preferably >1.2 and in each case <3 .
5. The polymer mixture according to any one of the preceding claims characterised in that the fraction A(j) of P(j) relative to P(i) + P(j) in wt.% is in the range $1 < A(j) < 90$, preferably $2 < A(j) < 85$, more preferably $3 < A(j) < 80$, most preferably $5 < A(j) < 75$.
6. The polymer mixture according to any one of the preceding claims characterised in that P(i) has a degree of branching $<3 \times 10^{-2}$, preferably $<1 \times 10^{-2}$, more preferably $<5 \times 10^{-3}$, most preferably $<1 \times 10^{-3}$ and P(j) has a degree of branching $<5 \times 10^{-2}$, preferably $<1 \times 10^{-3}$, more preferably $<1 \times 10^{-3}$, most preferably $<1 \times 10^{-4}$.
7. The polymer mixture according to any one of the preceding claims characterised in that P(j) has a polydispersity <30 , preferably <20 , more preferably <10 , most preferably <5 .
8. The polymer mixture according to any one of the preceding claims characterised in that P(i) and/or P(j) have long-chain branchings which have a degree of polymerisation >20 , preferably >30 , more preferably >40 , most preferably >50 .
9. The polymer mixture according to any one of the preceding claims characterised in that P(i) or the sequences A of P(i) is a polyolefin, especially a polypropylene or polyethylene such as VLDPE, LDPE, LLDPE, HDPE, HMWPE, UHMWPE.
10. The polymer mixture according to any one of the preceding claims characterised in that P(i) is a polyolefin and P(j) is selected from the following groups: n-alkanes C_nH_{2n+2} ; isoalkanes C_n ; cyclic alkanes C_nH_{2n} ; polyethylene wax; paraffins and paraffin wax of mineral

origin such as macrocrystalline, intermediate or microcrystalline paraffins, brittle, ductile, elastic or plastic microcrystalline paraffins; paraffins and paraffin wax of synthetic origin; hyper-branched alpha olefins; polypropylene wax.

11. The polymer mixture according to claim 9, characterised in that P(j) has a density in g/cm^3 of >0.9 , preferably >0.925 , more preferably >0.950 , especially >0.970 , most preferably >0.980 and/or P(j) has a melting or dropping point in $^{\circ}\text{C}$ of >80 , preferably >100 , more preferably >110 , especially >120 , most preferably >125 .
12. The polymer mixture according to any one of the preceding claims characterised in that the polymer mixture in the form of a thermoplastic melt is prepared by means of a dispersively and distributively acting mixing system, especially by means of a double-screw extruder or a single-screw extruder with mixing section or a Buss-Ko kneader and optionally after preparation is present in the form of granules, pellets, powder, macro- or micro-fibres, as film, casting, continuous casting, extrudate, thermo-shaped part and the like.